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ABSTRACT

A study examined the impact of vocational education enrollment on the occupational aspirations of high school students, after correcting for the effects of other variables that also affect those aspirations. The data used for the study were collected in the High School and Beyond Sophomore Cohort study, second follow-up, when former students were age 30. Variables taken into account were gender, socioeconomic status, grade point average, and basic ability. The results showed that the major contributor to basic ability was socioeconomic status. Basic ability was the major contributor to both grade point average and to vocational enrollment pattern, whereas vocational enrollment pattern was the major contributor to occupational aspiration. The study concluded that even when correcting for the effects of gender, socioeconomic status of family, basic ability, and high school grade point average, the students who enrolled in vocational education express lower occupational aspirations than nonvocational students. The results of the study thus support earlier findings that enrollment in vocational programs produces reduced occupational aspirations among students. However, the study recommended further research to determine what variables other than the ones studied produced the actual effect, as well as the fact that vocational educators stress the upward mobility possibilities of vocational education, not just entry-level jobs. (KC)

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VOCATIONAL ENROLLMENT PATTERNS AND OCCUPATIONAL ASPIRATIONS OF AMERICAN HIGH SCHOOL STUDENTS IN 1982: A CAUSAL ANALYSIS

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It is generally accepted that high school students enrolled in vocational education come from a lower socio-economic status than non-vocational students (Gordon, 1984). Wolfle (1985) found that vocational students have lower occupational aspirations than non-vocational students.

In a study assessing adolescents' career aspirations, Marjoribanks (1987) found that differing family environments played a major role in influencing the occupational aspirations of youth especially in females and working-class males. Lee and Ekstrom (1988) concluded that effective guidance counseling regarding career choices is not as readily available to minority students from low socio-economic families or to students from rural areas as it is to other groups of students. Miller (1987), in a study of career counseling for high school students, found that secondary students consider (a) their parent's opinions, (b) the degree of control they will have over their lives with their chosen career and (c) the intrinsic and extrinsic values associated with the career, when deciding upon a vocation.

A landmark study conducted by Duncan, Haller and Portes (1971) tested a causal model that attributes part of the decision to attend college to socio-economic status. But, they also believed that socio-economic status is not a complete explanation for occupational aspirations. Heyns (1974) reported that the overall curriculum followed by students in high school had a greater impact on their occupational aspirations than did grades, parental education, parental occupations, and siblings.

From this brief review of the literature, the reader can readily determine that many variables interact, with each contributing a portion of the influences bearing upon the student as he or she makes a career choice. The question is whether the negative effects of vocational enrollment patterns remain when the effects of those other variables is taken into account.

Paper presented to the National Agricultural Education Research Meeting, Saint Louis, Missouri, December, 1988

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PURPOSE AND OBJECTIVES

The overall purpose of this study was to examine the impact of vocational education enrollment on the occupational aspirations of American high school students, after correcting for the effects of other variables that also affect those aspirations. In order to address that broad purpose, the following objectives were identified:

1. To identify pertinent variables that reasonably could be expected to affect both vocational enrollment pattern and occupational aspirations.

2. To develop a causal model to examine the effects of vocational education enrollment pattern on occupational aspiration, taking into account the effects, both direct and indirect, of those confounding variables.

PROCEDURES

Data Source

The data used for this study was that collected in the High School and Beyond Sophomore Cohort study (Office of Educational Research and Improvement, 1984). Base year survey data were collected on over 30,000 high school sophomores in United States during 1980. The same students were surveyed again during school year 1982 for follow-up information. After completion of the school year, official school transcript data were collected. For this study, data from both the basic survey and from the transcript tapes were sub-sampled and merged.

In order to discuss causality, temporal ordering is a necessary but not sufficient condition. The High School and Beyond, sophomore cohort, second followup (Office of Educational Research and Improvement, 1984) was selected as the source of data for two reasons: 1) because it provides data on the variables that were determined to be appropriate, and 2) because those variables were collected at two different times, thus allowing for temporal ordering.

Variables

The model proposed is in four blocks (see figure 1). The first block contains two exogenous variables: sex and socioeconomic status (SES). Sex was based on student self-reporting. SES was a standardized composite based on both parents' educations, father's occupation, material possessions in home, and family income as reported by the student during the 1980 data collection.

The second block contains one endogenous variable, which is referred to as basic ability, and which was measured by a series of tests of math, reading, and vocabulary standardized aptitude tests administered in 1980, during the students' sophomore year. The third block contains two endogenous variables: vocational enrollment pattern measured as a composite variable from transcript data collected at the end of 1982 and high school grade point average, also computed from the student transcript data.

The fourth block contains the criterion variable, which is the students' expressed occupational aspirations at age 30, collected in the 1982 survey. The variable as reported was in a nominal form, with the student indicating an aspiration to become either a farmer, clerk, sales person, professional, or one of numerous occupational groups by age 30. The researchers used two panels to order the occupational categories and to create an interval variable for the analysis.

It could be argued that grade point average and vocational pattern were collected after aspirations were expressed, thus disrupting the temporal ordering of the variables. On the other hand, we believe that grades and enrollment pattern were being established over an extended period of time, and only the time of their collection was after the time when aspirations were expressed. For the purposes of this study, the temporal ordering as indicated in figure 1 is held to be defensible and is assumed to be correct.

ANALYSIS OF DATA

For the purposes of the study, the assumptions of homoscedasticity, underlying normal distributions, and interval data were made. Recognizing the problems inherent in those assumptions, we believe that the basic robustness of the procedure used (Kenny, 1979) allows such analysis.

The nature of the data set is such that specific populations of minorities and special targeted groups were over-sampled to insure adequate sample sizes for analysis. The effects of this over-sampling was corrected by the use of a weighting factor for each student's scores, as recommended by the Office of Educational Research and Improvement (1984). The use of such weights substantially affects the computations, particularly the variance-covariance matrix. Only by using them, can we generalize the results reported directly to the population of all members of the United States public and private high school sophomore class of 1980, remaining in school in 1982.

The sex variable was dummy-coded (m=1, f=0). The vocational enrollment pattern was coded concentrator = 4, limited concentrator = 3, sampler = 2, non-participant = 1. Other variables were

used as reported in the data set, or were recoded to allow more simple interpretation of the results.

Simple, descriptive statistics were computed -- mean, minimum, and maximum -- for each of the variables in the model, see Table 1. In addition, the first order Pearson Product-Moment correlation matrix was computed.

The model developed was a simple recursive one, thus it was just identified. Accordingly, ordinary path analysis provides an appropriate solution to the solution of the structural equations model (Pedhazur, 1982). The analysis technique used was the multiple regression procedure in the SAS package. To allow a more elaborate interpretation of the relative effect size and to eliminate interpretation problems arising from the skewing produced by the use of the weighting factors, we are reporting standardized path coefficients.

RESULTS

An examination of Table 1 provides a fairly clear picture of the nature of the variables in the model. High school grade point average was measured on a 0 - 4 scale. Of the 8,947 students in the study, GPAs ranged from 0.9 to 4.0, with a mean of 2.63. Vocational enrollment was reported on a 1 - 4 scale. Vocational enrollment patterns for students in the study ranged from 1.0, no vocational courses, to 4.0, vocational concentrator. The SES variable is a standardized composite, so Z-scores are reported.

It is worthy of note that the measure of dispersion reported is that of range rather than the more conventional standard deviation. The computation of standard deviations produced erratic and uninterpretable results because of the use of the weighting function discussed earlier. Hence, reporting them would not serve a useful purpose.

Table 1.
Sample Size, Means, Minimum, and Maximum Scores of Selected Variables

Variable	n	Mean	Min	Max
High School GPA	8947	2.63	0.90	4.00
Voc. Enrollment	8947	2.71	1.00	4.00
Basic Ability	8947	51.08	28.50	74.24
SES	8947	-0.02	-2.82	2.15

Table 2 shows the uncorrected (first order) correlations among the variables in the model. The strongest relationships are those between basic ability and grades (r = .556) and between socio-economic status and basic ability (r = .428). The correlation between vocational enrollment pattern and occupational aspirations (r = -.317) is low, negative (Hinkle, Wiersma, & Jurs, 1979). With the extreme size of the sample (n = 8947), all of the correlations are significant well beyond p < .01.

Table 2.
Correlation Coefficients of Selected Variables

	Occupational Aspiration	High School GPA	Vocational Enrollment Pattern	Basic Ability	SES	Sex
OCC Asp	1.000	.161	-.317	.281	.219	.035
GPA		1.000	-.177	.556	.261	-.164
Voc Enrol Pattern			1.000	-.338	-.292	-.049
Basic Ability				1.000	.428	.056
SES					1.000	.041
Sex						1.000

p < .01 on all coefficients

Figure 1 shows the results of the path analysis using standardized regression coefficients as path coefficients and correlations between non-causally related variables. The major contributor to basic ability was socio-economic status (b = +.428). Basic ability was the major contributor to both grade point average (b = + .550) and to vocational enrollment pattern (b = -.249). Vocational enrollment pattern, was the major contributor to occupational aspirations (b = -237). See Figure 1. Use of the tracing rule for computing effects, produces a total effect of -.239 from vocational enrollment pattern to occupational aspiration, but the additional effect (.002) is non-causal, and may be ignored. Total direct effects for the model are given in Table 3.

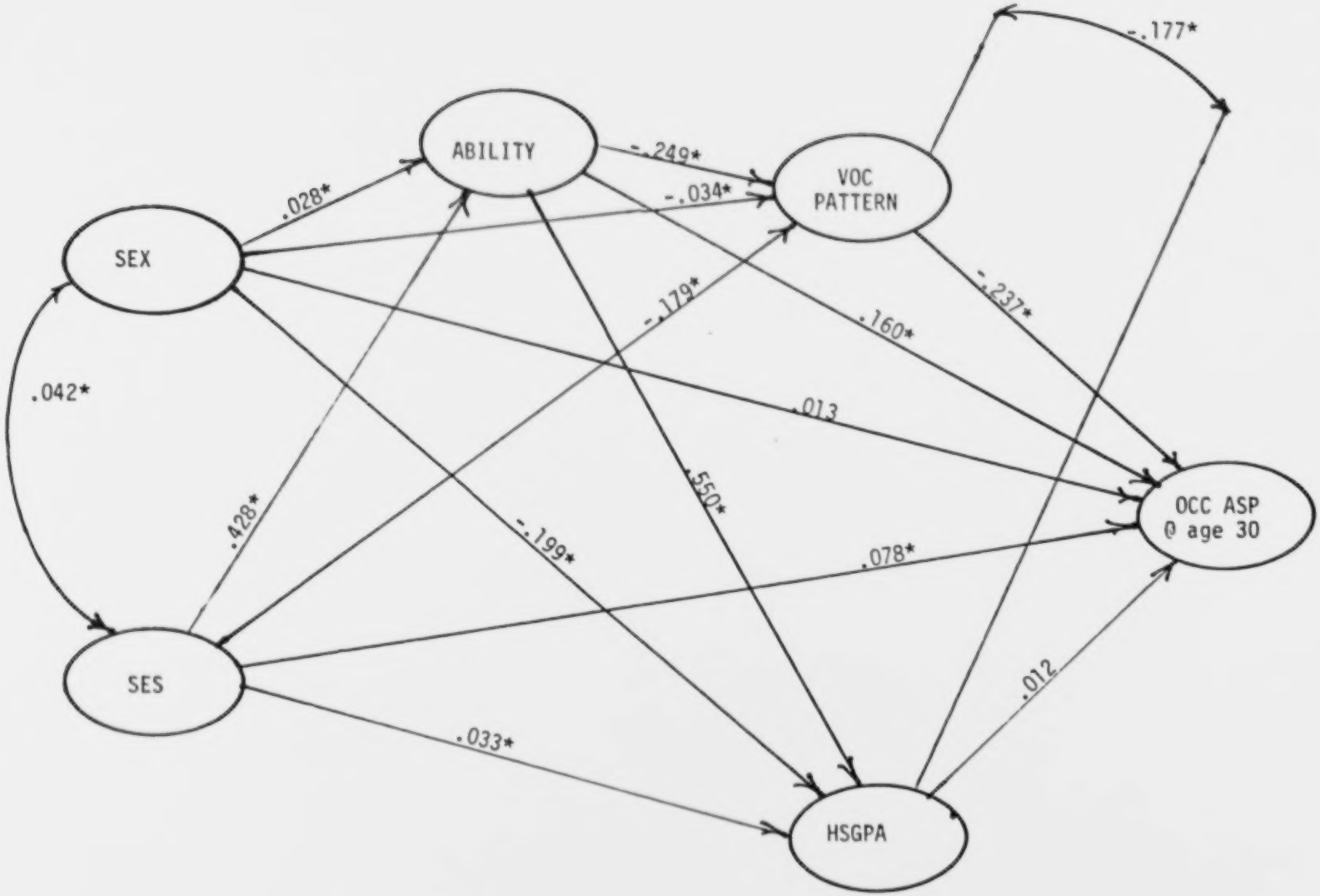

Figure 1. Path Diagram for Causal Model of High School Sophomores' Occupational Aspirations at Age 30, Using Standardized Path Coefficients.

* $p < .01$

Table 3
Total Causal Effects on Occupational Aspirations

	Direct Effects	Indirect Effects
Sex	.013	.007
SES	.078	.096
Vocational Pattern	-.237	-
Ability	.160	.065
Grade Point Average	.012	-

CONCLUSIONS

Even when correcting for the effects of gender, socio-economic status of family, basic ability, and high school grade point average, the students with enrollment in vocational education express lower occupational aspirations than non-vocational students. The size of the effect, however, is markedly lowered (from -.317 to -.237) by correcting for those variables.

The results of this study support the findings of Wolfle (1985) and Heyns (1974) that enrollment in vocational programs produces reduced occupational aspirations among students.

RECOMMENDATIONS

We can determine no clear reason for this phenomenon. Yet, the data produce clear results, even though the effect is small and the R^2 is negligible. Thus, we believe that two recommendations are warranted.

1. With 86% of the variance unexplained, it is clear that the underlying causes of occupational aspirations remain a mystery. Thus, further research is needed to determine what variables other than the ones examined in this study produce the actual effect.

2. The evidence is convincing that there is a lowering of occupational aspirations among students as their vocational enrollment becomes more extensive. Thus, vocational educators should emphasize the upward career mobility provided by vocational education and not merely the entry-level aspect of the programs.

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